

Stavrianopoulos et al.

Serial No.: Not Yet Known

(Divisional of S.N. 10/096,075, filed March 12, 2002)

Filed: Herewith

Page 3 [Preliminary Amendment (Accompanying Divisional Application  
Under 37 C.F.R. §1.53(b)) --- January 22, 2004]

**PLEASE AMEND THIS APPLICATION AS FOLLOWS:**

**In The Title:**

Change the title of the invention to:

-- LABEL TARGET AND LABELING REAGENTS COMPRISING BACKBONES  
WITH AT LEAST TWO CONSECUTIVE PEPTIDE BONDS --

**In The Claims:**

Cancel claim 1.

Add new claims 287-303 as follows:

Claim 1 (Canceled Herein)

Claims 2-286 (Previously Canceled)

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287. (NEW) A labeled target comprising

T -- L -- M

wherein T is a target, M is a marker moiety and L is a chemical group covalently linking said M to T, said chemical group L comprising a backbone that comprises at least two consecutive peptide bonds.

288. (NEW) The labeled target of claim 287, wherein said target T comprises a protein, a peptide, a nucleic acid, a nucleotide or a nucleotide analog, a receptor, a natural or synthetic drug, a synthetic oligomer, a synthetic polymer, a hormone, a lymphokine, a cytokine, a toxin, a ligand, an antigen, a hapten, an antibody, a carbohydrate, a sugar or an oligo- or polysaccharide.

289. (NEW) The labeled target of claim 288, wherein said nucleic acid or nucleotide or nucleotide analog is modified.

290. (NEW) The labeled target of claim 288, wherein said ligand comprises biotin, iminobiotin, digoxigenin or fluorescein.

291. (NEW) The labeled target of claim 287, wherein said marker moiety M comprises a ligand that comprises biotin, iminobiotin, digoxigenin or fluorescein.

292. (NEW) The labeled target of claim 287, wherein said marker moiety M comprises a fluorescent dye.

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293. (NEW) The labeled target of claim 292, wherein said fluorescent dye comprises a xanthene dye, a cyanine dye, a coumarin dye, a porphyrin dye or a composite dye.

294. (NEW) The labeled target of claim 293, wherein said xanthene dye comprises fluorescein, rhodamine or rhodol, or derivatives thereof.

295. (NEW) The labeled target of claim 287, wherein at least one of said two consecutive peptide bonds are separated by a single atom.

296. (NEW) The labeled target of claim 295, wherein said single atom comprises C, N, S, O or P.

297. (NEW) The labeled target of claim 287, wherein said backbone comprises one or more carbon atoms.

298. (NEW) The labeled target of claim 287, wherein said backbone comprises at least one non-carbon atom.

299. (NEW) The labeled target of claim 298, wherein said non-carbon atom comprises sulfur, oxygen or nitrogen.

300. (NEW) The labeled target of claim 287, wherein said chemical group L further comprises at least one additional moiety comprising peptide bonds, amino acids, aliphatic chains from C<sub>1</sub> through C<sub>20</sub>, alkene groups, alkyne groups, saturated or unsaturated or partially saturated rings, heterocyclic rings and sugars.

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301. (NEW) The labeled target of claim 287, wherein said chemical group L comprises a di-peptide or an oligo-peptide.

302. (NEW) The labeled target of claim 301, wherein said di-peptide or oligo-peptide comprises (glycine)<sub>2</sub> or (glycine)<sub>4</sub>.

303. (NEW) A labeling reagent comprising



wherein R is a reactive group, M is a marker moiety and L is a chemical group covalently linking said M to R, said chemical group L comprising a backbone that comprises at least two consecutive peptide bonds.

304. (NEW) The labeling reagent of claim 303, wherein said reactive group R comprises sulfhydryl, hydroxyl, amine, isothiocyanate, isocyanate, monochlorotriazine, dichlorotriazine, mono- or di-halogen substituted pyridine, mono- or di-halogen substituted diazine, maleimide, aziridine, sulfonylhalide, acid halide, hydroxysuccinimide ester, hydroxysulfosuccinimide ester, imidoester, hydrazine, azidonitrophenyl, azide, 3-(2-pyridyl dithio)-propionamide, glyoxal or aldehyde.

305. (NEW) The labeling reagent of claim 303, wherein as a reactive group R is capable of forming a carbon-carbon linkage with a target.

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306. (NEW) The labeling reagent of claim 303, wherein said reactive group R comprises an alkene group, an alkyne group, a halogenated compound or a metallo-organic compound.

307. (NEW) The labeling reagent of claim 306, wherein said metallo-organic compound comprises mercury, zinc, copper or platinum.

308. (NEW) The labeling reagent of claim 306, wherein said metallo-organic compound comprises an aromatic group, an aromatic heterocyclic group, an alkene group or an alkyne group.

309. (NEW) The labeling reagent of claim 303, wherein said marker moiety M comprises a ligand that comprises biotin, iminobiotin, digoxigenin or fluorescein.

310. (NEW) The labeling reagent of claim 303, wherein said marker moiety M comprises a fluorescent dye.

311. (NEW) The labeling reagent of claim 310, wherein said fluorescent dye comprises a xanthene dye, a cyanine dye, a coumarin dye, a porphyrin dye or a composite dye.

312. (NEW) The labeling reagent of claim 311, wherein said xanthene dye comprises fluorescein, rhodamine or rhodol, or derivatives thereof.

313. (NEW) The labeled target of claim 303, wherein at least one of said two consecutive peptide bonds are separated by a single atom.

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314. (NEW) The labeled target of claim 313, wherein said single atom comprises C, N, S, O or P.

315. (NEW) The labeled target of claim 303, wherein said backbone comprises one or more carbon atoms.

316. (NEW) The labeled target of claim 303, wherein said backbone comprises at least one non-carbon atom.

317. (NEW) The labeled target of claim 303, wherein said non-carbon atom comprises sulfur, oxygen or nitrogen.

318. (NEW) The labeled target of claim 303, wherein said chemical group L further comprises at least one additional moiety comprising peptide bonds, amino acids, aliphatic chains from C<sub>1</sub> through C<sub>20</sub>, alkene groups, alkyne groups, saturated or unsaturated or partially saturated rings, heterocyclic rings and sugars.

319. (NEW) The labeled target of claim 303, wherein said chemical group L comprises a di-peptide or an oligo-peptide.

320. (NEW) The labeled target of claim 319, wherein said di-peptide or oligo-peptide comprises (glycine)<sub>2</sub> or (glycine)<sub>4</sub> and sugars.

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